

REQUEST FOR RECONSIDERATION

Applicants wish to thank Examiner Arancibia for the discussion concerning the pending Final Office Action, and the non-obvious differences between the methods of the claimed invention and the combined cited references. In particular, Applicants explained with a non-limiting illustration comparing the present invention and US patent 6,100,167 to Falster et al., that it would not be obvious to combine the reference's disclosure with any other the reference, since the reference teaches away from the claimed invention and that such a combination would not represent the claimed invention. The following further expands on that discussion with the Examiner.

Rejections under 35 U.S.C. 103(a)

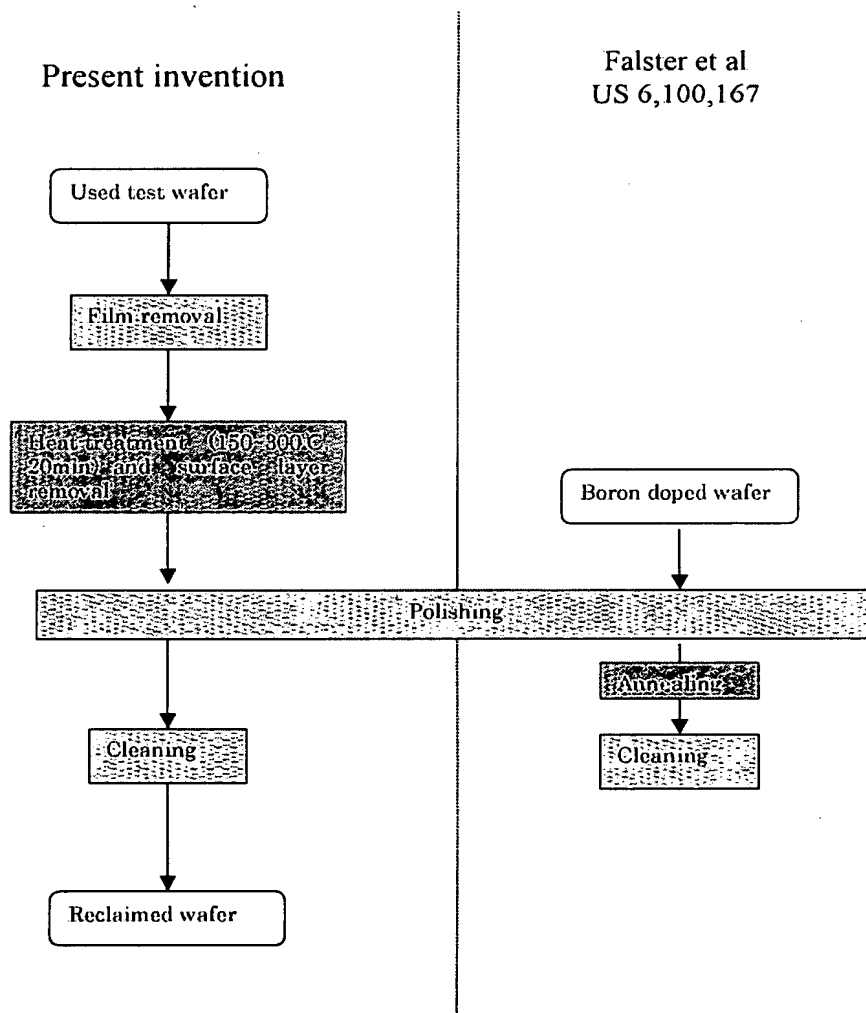
The rejection of claims 1-3 under 35 U.S.C. § 103(a) as obvious over Lawrence (US Patent No. 3,3923,567) in view of Falster et al. (US Patent No. 6,100,167); claims 5-8, 10, and 11 as obvious further in view of Linn et al. (US. Patent No. 5,932,022); claim 4 as obvious further in view of Chai et al. (US Patent No. 5,837,662); and claims 9, 12, and 13 further in view of Chai et al. are respectfully traversed for reasons of record and the additional reasons discussed below.

As an initial matter, Applicants note the Examiner's assertion that Applicants are merely attacking the references individually, i.e., regarding Applicants remarks concerning the disclosure of the Lawrence reference. However, Applicants were illustrating, in accordance with the MPEP, that it is improper to combine the references, based on their separate disclosures, where the references teach away from their combination. See MPEP 2145 ("Consideration of Applicant's Rebuttal Arguments"). As explained, the Lawrence reference does not describe, *inter alia*, a method that includes heating the silicon wafer is performed at 150-300 °C for 20 minutes to 5 hours. Moreover, it was noted that the disclosed process does not aim to remove whatsoever Cu not only deposited on a surface of silicon

wafers but penetrated inside the silicon wafers. Therefore, other than improper hindsight of the present specification, one would not rely on the disclosure of the Lawrence reference to achieve the claimed invention.

Regarding Falster et al., as explained in the discussion with the Examiner, one would not rely on this reference to combine with the disclosure of Lawrence or any other reference, since the combination would not represent the present invention. In particular, the present invention differs significantly from the method described in the reference.

As a non-limiting illustration of this difference, Applicants provide below a schematic comparison of the methods.



As shown above, in the present invention, a heat-treatment is done before a polishing, and therefore surface removal operation for removing about 1 μm of surface of the silicon wafer can be done in order to completely eliminate Cu. See page 14, second paragraph of the present specification. On the contrary, the annealing in Falster et al. is positioned *after* the polishing, and thus the wafers are lightly cleaned. See column 4 lines 56-69 of the reference. Moreover, Applicants note that there is no showing or indication in the reference that it would be desirable to modify the process to achieve a complete elimination of Cu. Therefore, the claimed process for polishing and/or cleaning is not obvious in view of the combined references.

In addition, Applicants note that the effect (excellent results) of the present invention over the method of Falster et al. is experimentally illustrated in the present specification. For instance, Examiner's attention is directed to Figure 3 of the present specification, which shows Cu concentrations in the top surface of the silicon wafers after cleaning and indicates that removing the surface part of the silicon wafer, e.g., by KOH etching, is necessary to remove Cu. Applicants note that KOH is representative of one of the alkali hydroxides recited in the claimed invention for the chemical removal process.

It is noted that Falster et al. describes several cleaning solutions, i.e., piranha mixture (mixture of sulfuric acid and hydrogen peroxide), RCA-type SC1, and SC2, for the cleaning step after the anneal step. See column 4, fourth paragraph of the reference. However, as shown in Figure 3 of the present specification, Applicants have experimentally demonstrated that Cu concentration by using, *inter alia*, SC2, is not effective. (Applicants note that "SO₂" in Figure 3 should read "SC2", which is an obvious error that is evidenced by the recitation at page 19, line 18 of the present specification). In particular, the concentration of Cu after the use of SC2 is significantly higher, which is completely different from the results obtained by

the present invention. Therefore, for this additional reason, one would clearly not rely on the disclosure of Falster et al. to achieve the claimed invention.

Accordingly, withdrawal of the rejections is requested.

Rejection under 35 U.S.C. 112, Second Paragraph

The rejection of claims 4, 6, and 9-13 under 35 U.S.C. § 112, second paragraph is respectfully traversed.

According to the Examiner, “use of the term ‘akali’ [is] very unclear,” the phrase “alkali hydroxide” is “confusing” and “redundant,” and thus “clarification and/or correction are requested.” Office Action at page 2, paragraph 2. Applicants respectfully disagree.

The language of the claims is clear and consistent with the specification and the interpretation that those skilled in the art would reach. See MPEP § 2111 (indicating that claims must be given their broadest *reasonable* interpretation). Moreover, Applicants note that “[c]laim terms are presumed to have the ordinary and customary meanings attributed to them by those of ordinary skill in the art.” MPEP § 2111.01; see also *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312, 75 USPQ2d 1321, 1326 (Fed. Cir. 2005) (*en banc*) (explaining that the Patent Office does not determine claim scope only the basis of claim language - dictionaries, etc. may be used). Further, the “meaning of words used in a claim is not construed [by the Office] in a ‘lexicographic vacuum.’” MPEP §§ 2106(II)(C) and 2111.

In the present case, as indicated on page 26, lines 6-17, of the present specification, phrases that include the term “alkali” would clearly include basic compositions, which may also include “alkali metals,” such as potassium and sodium. Therefore, when read in light of the specification, the language of the claims is clear.

Regarding Applicants remarks concerning claim 13 in the Amendment filed June 22, 2006, the point was that the scope of the term “alkali” in claim 13 should not have been construed as merely “limited to or defined as an ‘alkali metal.’”. As evidenced by the

compounds recited in the claim itself, the specification, and the dictionary reference provided, the phrase "alkali hydroxide" is inclusive of the specific alkali metal hydroxides recited in the claim, as well as other hydroxides that do not include alkali metal hydroxides, i.e., quaternary alkyl ammonium hydroxides, which are also mentioned in the claim.

Accordingly, withdrawal of the rejection is requested.

Applicants submit that the application is now in condition for allowance. Early notification of such allowance is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

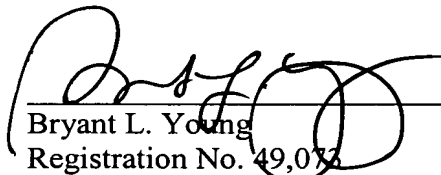
Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon

Customer Number

22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)


Bryant L. Young
Registration No. 49,071